APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/685,008	10/06/2000	Shingo Nozawa	862.C2029	2928

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EXAMINER
CHEN, WENPENG

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 03/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
	09/685,008	NOZAWA ET AL.
Office Action Summary	Examiner	Art Unit
	Wenpeng Chen	2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2003*.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

    4a) Of the above claim(s) *1-7, 17-23 and 33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-14, 16, 24-30, 32 and 34* is/are rejected.

7)☒ Claim(s) *15 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 October 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *5*.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Election/Restrictions

1.   Claims 1-7, 17-23, and 33 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Group I, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7.

2.   The Examiner disagreed with the reason of the traverse.

In paper #6, the Examiner restrict the claims into two groups:

-- Group I performs *region-of-interest (ROI) extraction based on subband coefficients*, which can be generated with a Harr wavelet transform, as recited in Claim 1;

-- Group II performs *ROI extraction based on the original image*, which does *not base on subband coefficients*, as recited in Claim 8.

The Applicants alleged that the restriction is incorrect as arguing especially in page 2 of paper #7 that "both groups use subband signals obtained by application of a Harr wavelet transform and extract a region of interest in a similar manner." Therefore, Groups I and II are usable together. However, the passages that the Applicants cited are applied to embodiments I and II, both belonging to Group I because they all use subband coefficients for ROI extraction. The Examiner did not request a restriction between embodiments I and II. The argument of traverse is thus not persuasive.

There is a true burden for the Examiner to search the prior art, because there is difference in operation principles for ROI extraction between Group I and II, as clearly shown in Fig. 1 (for Group I) and Fig. 9 (for Group II.)

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 8, 10, 13-14, 24, 26, 29-30, and 34 are rejected under 35 U.S.C. 102(b) as

being anticipated by Das et al. (US patent 5,896,176.)

Das teaches an image encoding apparatus comprising:

-- transformation means for applying a discrete wavelet transform to an image signal;

(column 5, lines 45-58; column 11, lines 33-54; column 13, lines 38-62)

-- motion detection means for detecting motion of an image based upon the image signal;

(column 5, line 59 to column 6, line 7; column 7, line 18 to column 8, line 8)

-- region designation means for designating a region of the image signal based upon

information indicating motion of the image detected by said motion detection means; (column 8,

lines 9-41)

-- quantization means for quantizing a discrete wavelet transformed output from said

transformation means in accordance with the region designated by said region designation means

and outputting a quantized image signal; (column 11, line 64 to column 12, line 19; column 13,

lines 38-62)

-- encoding means for encoding the quantized image signal quantized by said

quantization means; (column 13, lines 38-62)

-- wherein said motion detection means detects motion of the image in accordance with a difference between pixel values of corresponding pixels in two successive frames of the image signal; (column 5, line 59 to column 6, line 7; column 7, lines 19-39)

-- wherein said region designation means designates a region of the image signal based upon the information indicating motion of the image output by said motion detection means; (Figs. 5a-5d; column 8, line 20-41; Inside the rectangle shown in Fig. 5d, the motion region is indicated by 1.)

-- wherein said region designation means designates a region of the image signal not contained in the information indicating motion of the image output by said motion detection means. (Figs. 5a-5d; column 8, line 20-41; The (x0, y0) and (x1, y1) also designate region outside a rectangle in which the motion information is indicated.)

The above passages also teach the corresponding method Claims 24, 26, and 29-30.

Das also teaches memory that store instruction to implement the steps of the method recited in Claim 24. Therefore, it also teaches Claim 34.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 9 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. (US patent 5,896,176) as applied to Claims 8 and 24, and further in view of Kanda et al. (US patent 5,523,850.)

Das teaches the parental Claims 8 and 24 as discussed above. Das teaches detecting

motion objects based on difference of pixel values between two adjacent frames as discussed

above. However, Das does not teach features related to a difference between pixel values of two

vertically adjacent pixels recited in Claims 9 and 25.

Kanda teaches a system and method includes motion detection comprising feature of:

-- motion detection means that detects motion of the image in accordance with a

difference between pixel values of two mutually adjacent pixels vertically of the image signal.

(Fig. 5; column 6, lines 25-40; In the field format, pixel c is above x and x is above d vertically.)

It is desirable to apply a coder to many video formats including an interlaced format

having data stored and displayed as even and odd fields because it broadens application of the

coder. It would have been obvious to one of ordinary skill in the art, at the time of the invention,

to extend Das' coder to interlaced video data by replacing Das' frame difference with Kanda's

field difference for detecting moving pixels, because this replacement makes this extension

possible and thus broadens application of the coder.

7.   Claims 11 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Das et al. (US patent 5,896,176) as applied to Claims 8 and 24, and further in view of Yoneyama

et al. (US patent 6,025,879.)

Das teaches the parental Claims 8 and 24 as discussed above. Das further teaches

detecting motion objects on a block basis. However, Das does not teach features related to

detecting moving objects based on motion vectors recited in Claims 11 and 27.

Yoneyama teaches a system and method for detecting moving object in a coding process

including a wavelet transform (column 10, lines 6-18) comprising features of:

-- forming the image signal into blocks and calculating motion vectors on a block-by-

block basis; (Fig. 7A and 7B teaches that motion vectors are formed in a block-by-block basis.)

-- detection means for detecting motion of the image based upon whether magnitude of a

motion vector calculated by said block calculation means is greater than a predetermined value.

(Figs. 15 and 16; steps S41, S42, and S51)

It is desirable to detect a moving object quickly and accurately in object-based image

compression. It would have been obvious to one of ordinary skill in the art, at the time of the

invention, to apply Yoneyama's motion vector-based moving object detection to detect moving

objects for wavelet compression taught by Das because the combination improves detection of a

video object.

8.   Claims 12, 16, 28, and 32 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Das et al. (US patent 5,896,176) as applied to Claims 8 and 24, and further in

view of Chen et al. (US patent 6,263,022.)

Das teaches the parental Claims 8 and 24 as discussed above. Das further teaches scalable

compression based on regions of interest. (column 12, lines 43-52; column 14, lines 23-35)

However, Das does not teach features related to quantization recited in the above-listed claims.

Chen teaches:

-- a quantization means performs quantization upon raising quantization precision of an

image region designated as region of interest; (Fig. 2; column 6, lines 26-52; column 7, lines 36-

54; Bitplane shifting raises quantization precision. A video object is a region of interest.)

-- an encoding means decomposes a data sequence, which supplied from said

quantization means, into bit planes, applies binary arithmetic encoding on a per-bit-plane basis

and outputs code sequences giving priority to code sequences that correspond to bit planes of
higher order bits. (coder 250 of Fig. 2; column 2, lines 17-42; column 6, line 53 to column 7, line
6)

It is desirable to have quality scalability for video signal. As explained by Chen, up-
shifting the bit plane for a region of interest provides the scalability because data of the region of
interest is coded, transmitted, and decoded before a background region. It would have been
obvious to one of ordinary skill in the art, at the time of the invention, to apply Chen's bit-plane
compression to code Das quantized wavelet data because the combination provides quality
scalability for video signal based on video objects.

Allowable Subject Matter

9.   Claims 15 and 31 are objected to as being dependent upon a rejected base claim,
but would be allowable if rewritten in independent form including all of the limitations of the
base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter.
The prior art fails to teach the apparatus of Claim 15 and the method of Claim 31 which
specifically comprise the following feature in combination with other recited limitations:

-- wherein region designation includes:

- *selecting a method of designating an area* of the image signal that is *based upon*
the *information indicating motion* of the image detected by said motion detection means, based
upon *the number of pixels counted by the recited counting means.*

Conclusion

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Wenpeng Chen whose telephone number is 703 306-2796. The

examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David K Moore can be reached on 703 308-7452. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-872-9306 for regular

communications and 703-872-9306 for After Final communications. TC 2600's customer service

number is 703-306-0377.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is 703 305-4700.

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Wenpeng Chen
Primary Examiner
Art Unit 2624

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March 2, 2004